

Chapter V.—PRIME MOVERS, MOTORS, AND GENERATORS

This chapter presents statistics on power equipment in use and available for use in manufacturing establishments.

In making use of these statistics it should be borne in mind that the horsepower figures represent the total *rated capacity* of engines, motors, and other prime movers, and that the average amount of power in actual use during the year was considerably smaller.

The schedules for 1919 called for data in regard to water motors (driven by water from street mains), but no request for such data was carried on the schedules for later years. It is possible, however, that in some cases water motors were incorrectly reported as water turbines.

The power of electric motors driven by purchased current is included in the total primary power, as shown by the census reports; but, in order to avoid duplication, the power of motors driven by current generated in the same establishments is not included. (These two classes of motors are, in effect, primary and secondary power machines, respectively, in the establishments in which they are used.)

It will be noted by reference to the table beginning on page 1270 that the combined horsepower of steam engines and turbines, internal-combustion engines, and water wheels and turbines has not varied materially from census to census, whereas the power of electric motors has increased rapidly. In other words, during the 8-year period covered by the table the increase in the aggregate primary power is accounted for almost exactly by the increase in the power of electric motors driven by purchased current. As a consequence, a considerable increase is shown in the proportion which electric power forms of the total, and this results in an exaggeration of the extent of the increase in the use of power-driven machinery, since the difference between the horsepower rating of electric motors and the actual amount of motor horsepower in daily use is greater than the corresponding difference in the case of engines, turbines, and water wheels. This condition is due to the fact that in many factories some of the motors are idle or are operating at considerably less than their rated capacity during a large part of the time, so that the combined rated capacity of all the motors greatly exceeds the amount of power delivered by them at any given moment. To illustrate: In a factory using steam power applied directly through shafting and belting, an engine of 1,000 horsepower may be sufficient to drive all the machinery; but if, without any increase in the amount of machinery driven, the factory is equipped with electric power and a separate motor installed for each machine or each small group of machines, the combined rated capacity of these motors will almost certainly be much more than the 1,000 horsepower of the steam engine originally used. This would be necessary because each individual motor must be powerful enough to meet the maximum demand made upon it by the machine which it drives, whereas the steam engine need only be powerful enough to meet the maximum demand made upon it at any one time by all the machines taken as a group, which would be considerably less than the sum of the maximum demands made by the individual machines at different times. In other words, the maximum demand of the group of machines, which the steam engine must be able to meet, would be materially less than the sum of the maximum demands of the individual machines, which the motors must be able to meet. The number of horsepower hours of energy consumed would not, however, be any greater in a motorized factory than in a similar factory employing steam power.

Thus, the increase in the total rated capacity of prime movers, coming, as it does, wholly from new installations of electric motors, is not a true measure of the increase in the consumption of mechanical power in manufacturing establishments.

Data in regard to the number and the capacity of electric generators in use in manufacturing establishments were collected for the first time at the census for 1925. Some establishments which do not ordinarily use current generated in their own plants for their manufacturing operations nevertheless maintain one or more generators for emergency light and power purposes. For this reason the figures for generators can not in all cases be coordinated with those for motors driven by current generated in the establishments reporting.

APPENDIX I
**MOTORS, MOTORS, AND GENERATORS, BY NUMBER AND RATED CAPACITY, FOR THE UNITED STATES, 1927, 1925, 1923,
AND 1919, AND FOR GEOGRAPHIC DIVISIONS AND STATES, 1927**

data in regard to prime movers were collected for 1921. In order to render the statistics for 1919, 1923, and 1925 comparable with those for 1927, the following changes have been made in the figures heretofore published: (1) Data for establishments engaged in poultry killing and dressing deducted from 1919, 1923, and 1925 figures; (2) data for "Coffee and Spice, roasting and grinding" added to the figures for 1923 and 1919, from which they had been deducted. (Statistics for this industry were not compiled at the census for San Francisco.)

PRIME MOVERS, MOTORS, AND GENERATORS												
Illinois.....	3,373	726,308	3,214,547	2,456,907	1,3065	6,515	2,415,712	6,510	2,048,228	2,959	297,915	600
Michigan.....	473	370,449	265	355,454	471	235	389,077	666	11,983	121,435	509	161,610
Wisconsin.....	177	12,052	161,610	141,656	87,019	1,251	144,917	36,253	552,881	550,406	834,664	474,744
WEST NORTH CENTRAL:												
Minnesota.....	534	323	1,221	122,973	146	108,169	159	20,039	113	74,339	29,376	268,808
Iowa.....	2,514	330,702	710	76,621	79	61,183	155	4,558	25	1,201	24,041	157,139
Missouri.....	4,917	636,269	418	174,188	131	42,769	131	3,633	23	779	100	7,620
North Dakota.....	1,293	16,167	70	5,891	11	3,568	35	1,226	2	1,007	1,007	101,015
South Dakota.....	438	46,676	87	6,136	61	2,694	61	1,842	8	4,041	12,430	5,406
Nebraska.....	1,186	141,506	250	46,294	52	15,507	137	5,490	35	2,796	8,826	13,507
Kansas.....	1,863	279,426	589	72,481	92	42,081	251	28,381	28	4,041	12,430	13,507
SOUTH ATLANTIC:												
Delaware.....	417	103,166	339	34,774	41	28,741	71	2,216	43	1,977	4,616	35,453
Maryland.....	383	579,713	1,454	104,461	99	85,621	90	80,473	63	8,316	2,313	13,590
District of Columbia.....	402	39,471	75	6,789	20	3,647	25	918	2	775	3,945	27,342
Virginia.....	2,241	503,726	1,433	118,805	84	108,489	209	9,670	300	34,062	21,727	19,192
West Virginia.....	546,653	1,053	135,149	105	188,562	270	31,279	42	8,746	15,438	181,773	8,032
North Carolina.....	2,874	310,798	1,739	102,762	95	64,463	240	9,882	241	35,427	66,085	865,174
South Carolina.....	1,003	478,245	768	133,369	69	63,836	62	2,226	383	38,184	26,783	250,630
Georgia.....	2,795	505,899	958	169,678	75	62,691	62	9,421	90	29,142	30,645	4,889
Florida.....	1,624	177,580	776	68,572	54	18,152	297	14,421	14	795	9,764	314,967
EAST SOUTH CENTRAL:												
Kentucky.....	1,727	318,755	832	83,706	46	52,261	237	6,820	31	1,522	15,706	174,356
Tennessee.....	1,990	475,243	280	168,538	96	67,163	144	6,321	123	3,837	20,955	33,826
Alabama.....	2,220	776,156	1,946	266,860	114	102,580	564	13,882	15	5,478	4,985	6,932
MISSISSIPPI:	1,282	214,232	1,139	122,604	46	42,420	322	12,126	3	4,031	36,992	300,346
WEST SOUTH CENTRAL:												
Arkansas.....	1,105	183,041	1,088	104,881	39	25,725	150	6,709	97	1,724	9,687	45,581
Oklahoma.....	1,498	415,932	570	207,291	125	76,746	274	18,254	12	1,711	8,366	1,917
Texas.....	3,781	1,617	185,480	412	287	46,045	261	20,351	30	458	6,177	2,556
Montain:												
Montana.....	520	188,390	215	29,442	17	5,299	93	2,805	8	1,623	4,953	1,221
Wyoming.....	1,345	201,191	123	30,725	48	17,238	24	2,299	7	1,277	3,514	41,641
Idaho.....	244	536,539	536	85,383	84	83,963	62	6,661	10	4,511	1,932	1,641
New Mexico.....	21	477	126	12,978	61	5,962	20	2,101	1	1,022	4,406	1,476
Arizona.....	277	100,441	126	33,633	33	48,073	19	2,041	1	1,680	2,849	1,605
Utah.....	600	112,233	169	28,603	12	18,396	12	3,343	49	5,324	1,687	16,988
Nevada.....	104	21,974	27	7,225	4	180	18	3,456	3	542	10,571	1,744
Pacific:												
Washington.....	3,013	680,408	1,300	165,241	132	166,800	177	4,476	38	10,101	23,623	333,730
Oregon.....	1,632	339,411	764	77,078	65	59,421	91	1,872	124	50,576	13,293	150,564
California.....	9,936	1,338	146,197	503	114,386	413	26,146	34	10,531	103,831	1,041,923	111,52,071
												226,145,902
												247,80,049

¹ Data for a small number of water motors included for 1919 but not for 1923, 1925, or 1927.

² Steam turbines, included with "Steam engines"; data not called for separately on schedule.

³ Not called for on schedule.

⁴ Includes data for establishments with products valued at less than \$5,000. The statistics for 1923, 1925, and 1927 refer only to establishments reporting products valued at \$5,000 or more, but this change in the minimum value-of-products limit had only a negligible effect on the comparability of the statistics, except for number of establishments, as between different census years.

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY NUMBER AND RATED CAPACITY, BY INDUSTRY GROUPS AND INDUSTRIES.
1927

GROUP AND INDUSTRY		PRIME MOVERS										ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING			
Number of establishments reporting power equipment	Total rated capacity (horse-power)	Steam engines	Steam turbines	Internal-combustion engines	Water wheels and water turbines	Electric motors driven by purchased current	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Kilowatts Number	
All industries, total	174,118	38,825,631	64,507,10,140,381	8,875,6,783,550	12,665,1,170,774	7,504,1,508,668	2,151,675	19,132,310	70,810	11,219,979	19,028	7,345,686	19,028	7,345,686	
INDUSTRY GROUP															
1. Food and kindred products	46,564	4,134,973	13,4661	232,440	901	257,316	3,959	185,989	1,861	104,373	217,779	2,354,875	65,441	632,279	
2. Textiles and their products	24,873	4,173,458	5,756,1,001	117	720	705,636	261	15,059	2,145	457,638	145,648	1,065,723	149,844	1,065,723	
3. Forest products	18,850	3,214,756	1,457	684,889	691	483,528	2,363	56,638	561	127,259	1,044,457	66,931	829,495	2,280	611,817
4. Paper and paper products	2,385	3,214,756	3,045	684,889	579	523,747	83	7,075	1,966	901,453	56,392	42,305	1,003,050	1,446	716,230
5. Printing, publishing, and allied industries	22,078	568,427	201	37,770	6	1,632	433	4,322	4	180	222,879	324,473	8,299	31,783	
6. Chemicals and allied products	6,234	1,848,709	4,039	99,055	581	348,537	513	20,513	88	29,722	77,249	904,452	906	427,139	
7. Products of petroleum and coal	905	70,622	210	70,054	118	198,048	9	68,007	2	216	18,535	43,469	18,639	504,204	
8. Rubber products	9,988	419,591	1,051	112,055	72	56,234	72	4,249	39	3,415	27,507	51,718	13,888	437,286	
9. Leather and its manufactures	7,996	270,151	3,272	492,147	284	462,798	71,702	21,452	39	3,912	45,505	502,497	134,458	182,165	
10. Stone, clay, and glass products	6,189	8,323,037	5,152,2	732,828	1,108	385,727	592	587,453	167	16,120	172,410	3,100,912	123,512	3,805,698	
11. Iron and steel and their products, not including machinery	5,254	1,219,598	635	200,674	167	222,594	189	7,531	68	7,549	66,908	781,250	20,719	1,776,1,668,703	
12. Nonferrous metals and their products—	11,758	3,009,265	2,043	341,359	349	406,116	981	59,250	346	20,354	270,484	2,182,186	112,038	805,413	
13. Machinery, not including transportation equipment	2,484	2,027,686	1,118	219,472	292	335,566	322	16,901	25	9,207	152,365	1,446,450	38,560	473,944	
14. Transportation equipment, air, land, and water	2,016	1,110,821	1,882	252	146,839	145	6,525	4	4,452	44,314	674,723	18,044	204,289		
15. Railroad repair shops	11,183	840,919	1,525	183,498	80	64,126	456	19,454	116	7,419	103,068	666,422	24,290	729,112,310	
16. Miscellaneous	18	14,467	16	2,047	3	3,766	1	1	166	1	1	291	536	545	11,455
INDUSTRY															
1. Agricultural implements	270	117,966	158	34,346	40	18,233	38	1,297	33	3,623	5,373	60,484	2,919	39,482	
2. Aircraft and parts	70	6,031	1	35	1	150	2	76	1	2,288	5,771	8	1,12	1	
3. Alcohol, ethyl	23	7,261	67	3,821	13	617	6	2,901	243	2,923	1,151	2,142	19	1,375	
4. Aluminum manufactures	133	71,907	9	3,940	8	9,775	5	795	4,475	57,397	1,235	21,788	14	8,692	
5. Ammunition and related products	20	17,175	4	1,480	9	7,843	1	5	126	1,038	7,722	1,550	7,569	12	6,164
6. Artificial and preserved flowers and plants	76	541	18	14,467	16	2,047	3	3,766	1	1	291	536	545	11,455	
														25	1,204

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Artificial limbs	1,001	1	213	782	1	250
Artists' and draftsmen's materials	3,250	1	100	2,530	1	6,400
Asbestos products, other than steam packing or pipe and boiler covering	59	26	525	10	1,670	7
Asphalted-felt-base floor coverings	12	8,934	5	1,638	2	970
Awnings, tents, sails, and canvas covers	932	4,860	7	337	9	132
Babbitt metal, white metal, type metal, and solder	41	3,597	7	1,662	—	—
Bags, other than paper, not made in textile mills	179	15,754	24	4,302	1	1,340
Bags, paper, exclusive of those made in paper mills	83	9,336	9	925	—	—
Baking powders, yeast, and other leavening compounds	43	42,816	127	18,323	26	8,506
Baskets and rattan and willow ware, not including furniture	260	17,821	172	12,214	3	475
Betting, other than leather and rubber, made from purchased fabrics	10	1,457	6	643	—	—
Betting, leather	149	6,728	17	2,926	1	125
Beverages	4,760	153,731	740	70,526	21	2,065
Billiard and pool tables, bowling alleys, and accessories	30	2,335	3	1,450	—	—
Blanketing, stains, and dressings	118	4,005	16	769	—	—
Blanks	14	3,363	—	—	1	3
Bolts, nuts, washers, and rivets, not made in rolling mills	115	69,403	36	9,556	3	4,673
Bone black, carbon black, and lampblack	62	8,065	137	4,450	2	30
Bookbinding and blank-book binding	989	19,038	6	1,425	—	—
Boots and shoe cut stock, not made in boot and shoe factories	186	13,718	7	1,002	4	7,100
Boots and shoe findings, not made in boot and shoe factories	333	18,021	32	2,900	—	—
Boots and shoes, other than rubber	1,295	138,706	272	44,711	15	10,612
Boxes and shoes, rubber	134	68,359	22	12,763	1	1,334
Boxes, cigar, wooden	1,202	5,478	22	1,622	1	125
Boxes, paper and other, not elsewhere classified	1,717	81,300	99	13,847	4	648
Boxes, wooden, except cigar boxes	135,637	445	65,578	25	7,337	31
Brass, bronze, and other nonferrous alloys, and manufactures of these alloys and of copper, not specifically classified	1,001	404,512	123	36,644	46	66,593
Bread and other bakery products	16,933	284,244	258	33,973	18	1,476
Brooms	12,032	4,401	12	1,622	1	60
Brunches, other than rubber	239	145,973	1,465	30	2,571	1
Candles	204	15,899	40	4,651	—	—
Canning and preserving; Fish, crabs, shrimps, oysters, and clams	14	936	9	624	—	—
Canning and preserving; Fruits and vegetables, pickles, jellies, preserves, and sauces	261	18,574	239	7,325	7	98
Car and general construction and repairs, electric-railroad repair shops	2,207	189,831	1,950	77,879	39	4,762
Buttons	473	73,357	1	10	—	—

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY INDUSTRY GROUPS AND INDUSTRIES: 1927—Continued

INDUSTRY	Number of establishments reporting power equipment	Total rated capacity (horse-power)	PRIME MOVERS						ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING			ELECTRIC GENERATORS		
			Steam engines			Steam turbines			Internal-combustion engines		Water wheels and water turbines		Horse-power	
			Number	Horse-power 1/2	Horse-power 1/2	Number	Horse-power 1/2	Horse-power 1/2	Number	Horse-power 1/2	Number	Horse-power 1/2	Number	Kilowatts
INDUSTRY—continued														
Car and general construction and repairs, steam railroad repair shops.	1,543	1,037,464 ^a	1,861	282,242	205	146,839	142	6,400	4	482	37,786	601,441	18,044	264,289
Card cutting and designing	58	3,915	6	1,126	10	1,025	—	—	—	—	1,130	2,775	150	748
Carboard, not made in paper mills	9	1,779	10	1,025	—	—	—	—	—	—	294	754	200	730
Carpets and rugs, rag	104	2,005	8	150	21	339	23	22,786	4	43	1,772	448	6	39
Carpets and rugs, wool, other than rag	62	65,328	63	3,344	41	5,213	2	2	44	11	1,776	3,875	19,883	5,631
Carriage, wagon, sleigh, and sled materials	44	10,309	20	2,315	18	207	1	1	666	12	29	1,259	1,269	1,269
Carriages and sleds, children's	87	18,207	51	8,283	6	2,335	12	3,306	3	172	980	6,579	256	1,350
Cars, electric and steam, sleighs, and sleds	115	1,207	178	43,880	50	53,110	10	1,935	1	125	8,688	137,335	7,731	6,815
Cars, electric and steam railroad, not built in railroad repair shops	127	26,415	17	5,885	8	10,540	1	2	—	—	1,188	5,527	2,446	107
Cash registers, adding machines, and calculating machines	40	21,954	81	11,822	3	6,886	7	170	14	643	3,286	18,293	1,096	14,948
Caskets, coffins, burial cases, and morticians' goods	314	31,105	63	196	44	6,896	4	2,140	6	1,535	1,200	3,658	525	1,249
Cast-iron pipe	82	1,039,390	261	143,720	160	369,304	49	15,118	11	6,700	11,501	544,338	11,139	497,048
Cement	161	1,75	30,979	16	8,202	4	7,500	2	40	4	290	3,947	331	10,042
Cheese	1,978	30,976	1,280	10,730	186	3,015	478	1,736	4	21	1,626	5,364	100	665
Cheesecakes, not elsewhere classified	428	552,410	72	114,241	245	190,537	44	2,380	37	26,318	17,270	218,934	12,832	182,339
Chewing gum	37	10,097	27	3,902	1	80	1	10	—	—	1,534	6,105	346	2,637
China firing and decorating, not done in factories	11	43	—	—	—	—	—	—	—	—	21	43	43	4,176
Chocolate and cocoa products, not including confectionery	68	62,742	43	13,409	10	21,620	4	803	6	560	2,386	26,350	3,759	3,177
Cigars and cigarettes	679	35,819	27	7,887	8	6,401	9	1,369	2	10,465	20,348	9,140	30	10,960
Clay products (other than pottery) and non-clay refractories	1,788	509,581	1,547	194,888	34	3,219	444	23,774	4	205	12,297	307,485	1,930	27,581
Cleaning and polishing preparations	248	8,485	8	1,045	1	400	14	1,196	—	—	1,143	6,344	40	490
Clocks, time-recording devices, and clock movements	47	9,510	10	5,150	—	—	—	—	—	2	130	724	4,181	5,561
Clothes sponging and refinishing	491	933	5	—	—	—	—	—	—	2	—	—	—	3,982

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Clothing (except work clothing), men's, youths', and boys', not elsewhere classified...	3,050	34,351	81	8,250	5	552	16	83	9	995	3,174	54
Clothing, women's, not elsewhere classified...	7,163	30,257	6	1,218	10	1,054	8	131	3	266	15,607	4,539
Clothing, work (except shirts), men's...	635	1,218	31	4,092	255	225	12	12	5	266	24,887	4+
Coffee and spice, roasting and grinding...	760	422	481	1,030	334	225	336	13	15	266	3,680	530
Coke, not including gas-house coke...	127	1,218	1,218	110	2,100	2,100	1	1	1	266	7,633	21
Colls, men's...	23	3,131	3	335	3	2,100	1	72	1	266	99	122,054
Corns and hairpins, not made from metal or rubber...	32	1,591	9	485	10	10	60	10	3	266	907	2,995
Compressed and liquefied gases...	271	70	459	73	5,067	1	10	1,190	5	266	906	1,673
Concrete products...	2,081	54,332	83	2,650	42	2,575	19	545	18	266	775	15
Condensed and evaporated milk...	404	63	989	639	33,838	33	453	5	183	266	830	1,673
Confectionery...	1,633	110	595	283	32,030	10	870	15	19	266	830	1,673
Cooperage, tin and sheet-iron work, including galvanized iron work, not elsewhere classified...	284	33,533	168	21,430	4	502	13	451	4	266	77,077	11,077
Cordage and twine...	1,180	35,880	12	2,330	41	1,301	1	1,301	1	266	907	3,174
Cork products...	116	74,929	72	22,077	10	7,245	2	125	26	266	775	1,673
Corn sirup, corn oil, and starch...	24	81,683	13	1,885	2	1,430	1	6	4	266	907	1,673
Corsets and allied garments...	25	81,003	39	20,227	27	58,394	2	892	1	266	907	1,673
Cotton goods...	217	7,819	25	3,470	1	350	32	60	3	266	649	56,640
Cotton, small wares...	1,345	2,358	830	781	505,763	248	486,231	32	823	21,205	293,089	169,826
Cutlery (not including silver and plated cutlery) and edge tools...	227	43,410	33	5,530	7	8,640	12	876	48	266	907	1,673
Dairymen's supplies; creamery, cheese-factory, and butter-factory equipment; and poultrymen's and apiarists' supplies...	142	13,576	25	2,541	2	1,800	10	228	1	266	907	1,673
Dental goods, including dental laboratory work...	326	4,341	4	813	2	766	7	65	1	266	907	1,673
Doors, shutters, and window sash and frames, metal...	112	20,626	5	587	6	220	6	163	4	266	907	1,673
Drug grinding...	25	4,602	56	1,821	6	2,602	6	613	4	266	907	1,673
Druggists' preparations...	279	15,919	39	4,573	8	2,602	14	1,419	6	266	907	1,673
Dyeing and finishing textiles...	722	287	212	897	83,892	104	86,086	14	10,780	16	592	100,065
Electrical machinery, apparatus, and supplies...	1,641	661,163	155	34,047	76	200,427	56	5,204	16	1,635	86,308	419,885
Electroplating...	404	14,090	5	172	5	5	99	5	15	2,104	13,819	695
Embroideries...	831	2,930	3	52	1	1	1	1	1	2,845	2,863	1,120
Emery wheels and other abrasive and polishing appliances...	108	13,464	7	1,408	3	1,630	2	220	1	2,104	7,831	2,196
Engraving and jannering...	211	241,788	79	19,30	22	43,700	134	17,527	4	1,036	6,880	1,148
Engravers' materials...	17	864	19	627	22	50	4	105	14,519	160,879	11,563	
Engraving (other than steel, copperplate, or wood), chasing, etching, and dissolving...	132	2,028	1	100	1	1	1	1	1	2,949	6,508	1,148
Engraving, steel and copperplate, and plate printing...	318	6,894	7	378	1	1	1	1	1	51	45	54,729
Engravings, wood...	13	445	22	2,611	1	50	4	110	2	265	8,355	1,786
Envelopes...	152	11,391	22	1	1	1	1	1	1	2,723	2,723	21

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY NUMBER AND RATED CAPACITY, BY INDUSTRY GROUPS AND INDUSTRIES: 1927—Continued

INDUSTRY	Number of establishments reporting power equipment	PRIME MOVERS						ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING			Kilowatts	
		Steam engines		Steam turbines		Internal-combustion engines		Electric motors driven by purchased current		Horse-power	Number	
		Horse-power	Number	Horse-power	Number	Horse-power	Number	Water wheels and water turbines	Horse-power			
INDUSTRY—continued												
Excelsior	64	10,930	37	5,601	11	114	11	210	205	4,119	4	
Explosives	99	38,239	208	14,322	15	5,330	8	967	1,220	17,506	1,641	
Fancy and miscellaneous articles, not elsewhere classified	429	10,892	17	1,113	6	118	4	72	3,165	9,499	80	
Feathers, plumes, and manufactures thereof	20	115,103	67	6,632	1	75	23	1,725	578	5,443	134	
Feeds, prepared, for animals and fowl	447	115,835	36	5,975	5	3,467	39	2,356	106,845	11,632	657	
Felt goods, wool or hair	50	23,479	318	22,443	3	737	116	3,540	3,533	1,162	66	
Fertilizers	601	136,274	10	5,375	1	2,211	1	25	6,324	129,489	607	
Fires	36	10,979	15	1,547	17	2,211	2	350	2	539	5,579	
Firearms	20	15,747	1	1,504	1	2,211	2	350	2	539	10,734	
Fire extinguishers, chemical	24	1,300	3	400	1	8	1	20	1	564	1,564	
Fireworks	20	1,300	2	205	1	8	1	20	1	564	1,564	
Flags and banners	39	7,700	139	15,204	7	516	22	320	1	32	205	
Flavoring extracts and flavoring syrups	372	27,983	10	520	1	3	322	1	54	2,482	257	
Flax and hemp, dressed	4,034	641,684	805	12,553	38	27,487	1,094	62,227	1,757	99,546	11,867	
Flour and other grain-mill products	604	34,773	119	11,736	8	1,959	17	178	2	335	10,778	
Food preparations, not elsewhere classified	209	126,887	59	6,372	14	5,973	17	1,945	7	384	7,160	
Forgings, iron and steel, not made in steel-works or rolling mills	8,217	1,538,856	1,301	187,435	134	79,650	682	31,013	229	9,677	112,233	
Foundry and machine-shop products, not elsewhere classified	61	11,133	39	3,558	1	11	501	1	100	401	797	
Foundry, manufactured	19	9,534	4	280	1	1	1	1	1	346	10,156	
Fur goods	2,206	5,655	—	—	—	—	—	—	—	5,655	—	
Furnishing goods, mens, not elsewhere classified	485	7,190	13	1,472	9	279	2	200	3,175	5,239	225	
Furniture, including store and office fixtures	3,111	445,179	805	16,148	46	20,657	52	1,408	4,320	18,838	20,366	
Furs, dressed	157	12,467	20	3,011	1	201	1	1	1,222	9,466	1,411	
Gavairizing and other coating, not done in rolling mills	48	2,657	2	42	1	40	1	50	—	2,525	1,763	
Gas and electric fixtures, lamps, lanterns, and reflectors	432	31,291	23	3,482	1	125	9	141	5	1,125	2,229	
										309	1,946	

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY NUMBER AND RATED CAPACITY, BY INDUSTRY GROUPS AND INDUSTRIES: 1927—Continued

INDUSTRY	Number of establishments reporting power equipment	PRIME MOVERS										ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING					
		Steam engines	Steam turbines	Internal-combustion engines	Water wheels and water turbines	Electric motors driven by purchased current	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Horse-power	Kilowatts		
Mineral goods—																	
Innoleneum.	18	11,473	12	4,460	1	500			13	1,468	460	5,045	152	2,752	15		
Liquors, viuous—	7	41,432	33	8,340	10	1,768	1	6	2,043	34,313	513	8,708	29	5,036	29		
Stereographing—	12	999	5	92	2	1,150	2	9	122	898	513	8,708	29	5,036	29		
Automobiles, not made in railroad repair shops.	297	28,541	27	5,766	2	1,150	8	141	6,521	21,484	1,058	4,670	23	3,555	23		
Automating greases, not made in petroleum refineries, not made in railroad repair shops.	17	148,971	86	24,482	15	13,880	27	6,608	5,903	104,051	2,745	60,377	61	21,728	61		
Number and timber products, not elsewhere classified—	42	3,181	11	1,747	4	60	4	69	197	1,305	95	2,095	4	1,016	4		
Cannery products—	7,249	1,781,734	11,652,107,082	478	418,386	1,579	41,999	297	22,369	12,121	227,748	27,673	522,624	1,062	409,586	1,062	
Household articles—	353	131,670	100	19,292	18	3,585	322	537	322	11,617	15,944	63,918	2,555	1,947	2,555		
Machine tools—	23	15,380	31	8,995	1	750	1	5	882	13	615	11,386	3,876	35,411	81	15,067	81
Furniture, granite, slate, and other stone products—	1,872	295,174	525	37,888	6	2,540	189	5,313	56	15,641	1,080	5,782	2,041	7,946	23	7,946	23
Matches—	19	17,607	23	5,451	7	6,374	1	10	50	100	325	10	182	3	7,518	3	
Fats and margarine, grass and cotton—	6	1,425	2	1,080	1												
Leather goods—	825	32,937	27	3,203	—	—	14	277	3	175	6,084	29,282	541	2,815	9		
Textile working machinery, other than machine tools—	61	23,078	17	3,375	5	645	3	210	7	1,707	18,848	544	6,206	15	2,115	15	
Illinoian—	1,020	7,920	26	1,754	3	7	2	—	—	4,216	6,139	637	9	675	9		
Materials and earths, ground or otherwise treated—	245	116,909	133	13,488	13	13,825	91	4,397	38	4,322	2,615	30,927	563	16,734	42		
Furniture and picture frames—	142	6,228	13	4,500	—	—	—	—	1	30	1,192	4,608	55	272	55	272	
Mirrors, framed and unframed—	234	7,630	21	1,677	—	—	—	—	1	3	1,249	3,930	20	6,299	20	6,299	20
Pattern models and patterns, not including paper pattern pictures, not including projection in motion pictures—	667	11,465	7	1,040	—	—	—	—	15	313	1	3,485	10,092	428	2	500	2

PRIME MOVERS, MOTORS, AND GENERATORS

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204	75,674	207	51,164	149	232,674	6	351	52,715	441,485	183,705	16,173	195,705
205	10,763	8	2,050	1	10	1	60	205	8,398	169	1,695	3
206	59	219	14	471	1	10	1	253	1,758	14	257	1
207	14	6,650	8	328	6	470	5	964	6,597	1,509	7,038	35
208	14,185	39	6,650	8	328	6	470	5	140	2,385	5,231	5,133
209	79	10	100	6	6	25	1	1,103	3,698	12,756	12,756	1
210	65	655	68	14,739	10	1,108	15	76	2,718	1,768	54	10,358
211	68	29,725	63	1,970	1	118	3	88	4	167	5,720	2
212	63	8,073	13	1,970	1	118	3	380	5,720	46	246	76
213	53	7,250	12	1,846	7	1,403	3	25	10	583	1,085	209
214	45	1,622	4	1,730	1	1	3	250	2,680	255	2,680	2,004
215	547	270,500	546	134,357	10	3,779	85	14,776	1	3	117,555	1,044
216	33	22,733	16	2,333	3	4,480	3	280	250	786	20,880	1,066
217	12	20,758	18	4,451	1	1	2	1	12	57	273	8
218	161	20,686	120	6,079	13	1,740	9	86	1,169	1,169	121	1,164
219	8	3,565	9	2,185	1	1	75	226	1,305	539	1,305	1,088
220	94	not elsewhere classified	94	100	6	6	25	1	1,103	3,698	12,756	12,756
221	615	4,332	615	665	3	49	175	15	76	2,718	1,768	54
222	616	13,956	616	1,970	1	118	3	88	4	167	5,720	2
223	617	1,725	617	1,730	1	118	3	380	5,720	46	246	76
224	618	1,725	618	1,730	1	118	3	250	2,680	255	2,680	2,004
225	619	1,725	619	1,730	1	118	3	121	1,169	1,169	121	1,164
226	620	1,725	620	1,730	1	118	3	226	1,305	539	1,305	1,088
227	621	not elsewhere classified	621	100	6	6	25	1	1,103	3,698	12,756	12,756
228	622	cake, and meat, confectioned	622	100	6	6	25	1	1,103	3,698	12,756	12,756
229	623	cake, and meat, confectioned	623	100	6	6	25	1	1,103	3,698	12,756	12,756
230	624	cake, and meat, confectioned	624	100	6	6	25	1	1,103	3,698	12,756	12,756
231	625	cake, and meat, confectioned	625	100	6	6	25	1	1,103	3,698	12,756	12,756
232	626	cake, and meat, confectioned	626	100	6	6	25	1	1,103	3,698	12,756	12,756
233	627	cake, and meat, confectioned	627	100	6	6	25	1	1,103	3,698	12,756	12,756
234	628	cake, and meat, confectioned	628	100	6	6	25	1	1,103	3,698	12,756	12,756
235	629	cake, and meat, confectioned	629	100	6	6	25	1	1,103	3,698	12,756	12,756
236	630	cake, and meat, confectioned	630	100	6	6	25	1	1,103	3,698	12,756	12,756
237	631	cake, and meat, confectioned	631	100	6	6	25	1	1,103	3,698	12,756	12,756
238	632	cake, and meat, confectioned	632	100	6	6	25	1	1,103	3,698	12,756	12,756
239	633	cake, and meat, confectioned	633	100	6	6	25	1	1,103	3,698	12,756	12,756
240	634	cake, and meat, confectioned	634	100	6	6	25	1	1,103	3,698	12,756	12,756
241	635	cake, and meat, confectioned	635	100	6	6	25	1	1,103	3,698	12,756	12,756
242	636	cake, and meat, confectioned	636	100	6	6	25	1	1,103	3,698	12,756	12,756
243	637	cake, and meat, confectioned	637	100	6	6	25	1	1,103	3,698	12,756	12,756
244	638	cake, and meat, confectioned	638	100	6	6	25	1	1,103	3,698	12,756	12,756
245	639	cake, and meat, confectioned	639	100	6	6	25	1	1,103	3,698	12,756	12,756
246	640	cake, and meat, confectioned	640	100	6	6	25	1	1,103	3,698	12,756	12,756
247	641	cake, and meat, confectioned	641	100	6	6	25	1	1,103	3,698	12,756	12,756
248	642	cake, and meat, confectioned	642	100	6	6	25	1	1,103	3,698	12,756	12,756
249	643	cake, and meat, confectioned	643	100	6	6	25	1	1,103	3,698	12,756	12,756
250	644	cake, and meat, confectioned	644	100	6	6	25	1	1,103	3,698	12,756	12,756
251	645	cake, and meat, confectioned	645	100	6	6	25	1	1,103	3,698	12,756	12,756
252	646	cake, and meat, confectioned	646	100	6	6	25	1	1,103	3,698	12,756	12,756
253	647	cake, and meat, confectioned	647	100	6	6	25	1	1,103	3,698	12,756	12,756
254	648	cake, and meat, confectioned	648	100	6	6	25	1	1,103	3,698	12,756	12,756
255	649	cake, and meat, confectioned	649	100	6	6	25	1	1,103	3,698	12,756	12,756
256	650	cake, and meat, confectioned	650	100	6	6	25	1	1,103	3,698	12,756	12,756
257	651	cake, and meat, confectioned	651	100	6	6	25	1	1,103	3,698	12,756	12,756
258	652	cake, and meat, confectioned	652	100	6	6	25	1	1,103	3,698	12,756	12,756
259	653	cake, and meat, confectioned	653	100	6	6	25	1	1,103	3,698	12,756	12,756
260	654	cake, and meat, confectioned	654	100	6	6	25	1	1,103	3,698	12,756	12,756
261	655	cake, and meat, confectioned	655	100	6	6	25	1	1,103	3,698	12,756	12,756
262	656	cake, and meat, confectioned	656	100	6	6	25	1	1,103	3,698	12,756	12,756
263	657	cake, and meat, confectioned	657	100	6	6	25	1	1,103	3,698	12,756	12,756
264	658	cake, and meat, confectioned	658	100	6	6	25	1	1,103	3,698	12,756	12,756
265	659	cake, and meat, confectioned	659	100	6	6	25	1	1,103	3,698	12,756	12,756
266	660	cake, and meat, confectioned	660	100	6	6	25	1	1,103	3,698	12,756	12,756
267	661	cake, and meat, confectioned	661	100	6	6	25	1	1,103	3,698	12,756	12,756
268	662	cake, and meat, confectioned	662	100	6	6	25	1	1,103	3,698	12,756	12,756
269	663	cake, and meat, confectioned	663	100	6	6	25	1	1,103	3,698	12,756	12,756
270	664	cake, and meat, confectioned	664	100	6	6	25	1	1,103	3,698	12,756	12,756
271	665	cake, and meat, confectioned	665	100	6	6	25	1	1,103	3,698	12,756	12,756
272	666	cake, and meat, confectioned	666	100	6	6	25	1	1,103	3,698	12,756	12,756
273	667	cake, and meat, confectioned	667	100	6	6	25	1	1,103	3,698	12,756	12,756
274	668	cake, and meat, confectioned	668	100	6	6	25	1	1,103	3,698	12,756	12,756
275	669	cake, and meat, confectioned	669	100	6	6	25	1	1,103	3,698	12,756	12,756
276	670	cake, and meat, confectioned	670	100	6	6	25	1	1,103	3,698	12,756	12,756
277	671	cake, and meat, confectioned	671	100	6	6	25	1	1,103	3,698	12,756	12,756
278	672	cake, and meat, confectioned	672	100	6	6	25	1	1,103	3,698	12,756	12,756
279	673	cake, and meat, confectioned	673	100	6	6	25	1	1,103	3,698	12,756	12,756
280	674	cake, and meat, confectioned	674	100	6	6	25	1	1,103	3,698	12,756	12,756
281	675	cake, and meat, confectioned	675	100	6	6	25	1	1,103	3,698	12,756	12,756
282	676	cake, and meat, confectioned	676	100	6	6	25	1	1,103	3,698	12,756	12,756
283	677	cake, and meat, confectioned	677	100	6	6	25	1	1,103	3,698	12,756	12,756
284	678	cake, and meat, confectioned	678	100	6	6	25	1	1,103	3,698	12,756	12,756
285	679	cake, and meat, confectioned	679	100	6	6	25	1	1,103	3,698	12,756	12,756
286	680	cake, and meat, confectioned	680	100	6	6	25	1	1,103	3,698	12,756	12,756
287	681	cake, and meat, confectioned	681	100	6	6	25	1	1,103	3,698	12,756	12,756
288	682	cake, and meat, confectioned	682	100	6	6	25	1	1,103	3,698	12,756	12,756
289	683	cake, and meat, confectioned	683	100	6	6	25	1	1,103	3,698	12,756	12,756
290	684	cake, and meat, confectioned	684	100	6	6	25	1	1,103	3,698	12,756	12,756
291	685	cake, and meat, confectioned	685	100	6	6	25	1	1,103	3,698	12,756	12,756
292	686	cake, and meat, confectioned	686	100	6	6	25	1	1,103	3,698	12,756	12,756
293	687	cake, and meat, confectioned	687	100	6	6	25	1	1,103	3,698	12,756	12,756
294	688	cake, and meat, confectioned	688	100	6	6	25	1	1,103	3,698	12,756	12,756
295	689	cake, and meat, confectioned	689	100	6	6	25	1	1,103	3,698	12,756	12,756
296	690	cake, and meat, confectioned	690	100	6	6	25	1	1,103	3,698	12,756	12,756
297	691	cake, and meat, confectioned	691	100	6	6	25	1	1,103	3,698	12,756	12,756
298	692	cake, and meat, confectioned	692	100	6	6	25	1	1,103	3,698	12,756	12,756
299	693	cake, and meat, confectioned	693	100	6	6	25	1	1,103	3,698	12,756	12,756
300	694	cake, and meat, confectioned	694	100	6	6	25	1	1,103	3,698	12,756	12,756
301	695	cake, and meat, confectioned	695	100	6	6	25	1	1,103	3,698	12,756	12,756
302	696	cake, and meat, confectioned	696	100	6	6	25	1	1,103	3,698	12,756	12,756
303	697	cake, and meat, confectioned	697	100	6	6	25	1	1,103	3,698	12,756	12,756
304	698	cake, and meat, confectioned	698	100	6	6	25	1	1,103	3,698	12,756	12,756
305	699	cake, and meat, confectioned	699	100	6	6	25	1	1,103	3,698	12,756	12,756
306	700	cake, and meat, confectioned	700	100	6	6	25	1	1,103	3,698	12,756	12,756
307	701	cake, and meat, confectioned	701	100	6	6	25	1	1,103	3,698	12,756	12,756
308	702	cake, and meat, confectioned	702	100	6	6	25	1	1,103	3,698		

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY NUMBER AND RATED CAPACITY, BY INDUSTRY GROUPS AND INDUSTRIES: 1927—Continued

INDUSTRY	Number of establish- ments re- porting power equipment	Total rated capacity (horse- power)	PRIME MOVERS				ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING				ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING			
			Horse- power Num- ber	Steam engines	Steam turbines	Internal- combustion engines	Horse- power Num- ber	Water wheels and water turbines	Horse- power Num- ber	Electric motors driven by purchased current	Horse- power Num- ber	Horse- power Num- ber	Kilo- watts	
INDUSTRY—continued														
Printing and publishing, newspaper and periodical materials, not including type or printing ink.	8,424	286,234	79	18,620	4	632	392	3,135	—	79,156	263,941	3,428	17,084	
Pulp goods	70	2,339	6	213	—	1	—	—	6	676	2,123	6	96	
Pulp (wood and other fiber)—follows "Paper," P. 127A.	43	17,158	28	3,405	8	4,571	—	—	6	650	8,685	635	7,013	
Pumps (hand and power) and pumping equipment.	267	64,763	55	9,305	21	9,546	17	1,165	9	1,125	5,697	43,532	2,505	
Rayon.	19	122,406	66	7,228	47	63,149	1	10	—	6,251	46,419	4,149	64	
Refrigerators and refrigerator cabinets, exclusive of mechanical refrigerating equipment.	159	24,216	47	8,411	5	2,817	2	52	1	25	2,669	12,911	33,387	
Refrigerators, mechanical.	21	40,084	4	1,450	1	7,533	—	—	4	768	31,101	1,588	10,608	
Regals, badges, and emblems.	63	1,015	3	325	—	—	1	—	1	—	1,625	12,422	5,871	
Rice cleaning and polishing.	60	23,012	58	15,723	3	230	—	2	210	—	271	6,830	56	
Roofing materials, not including wood, slate, burnt tile, asbestos, or metal other than metal shingles and ceilings, or other than rubber goods, other than tires, inner tubes, and boots and shoes.	92	41,740	41	4,679	5	3,042	8	405	8	2,000	2,345	31,614	430	
Saddlery and harness.	364	270,539	133	31,513	32	23,304	8	327	13	1,504	9,820	213,891	1,715	
Safes and vaults.	108	451,724	110	25,755	83	174,159	1	10	1	90	13,909	251,407	11,830	
Salt.	242	4,908	5	1,800	—	—	6	103	—	—	1,030	3,915	182,522	
Sand-line brick.	55	9,988	5	1,965	—	—	—	—	—	—	7,723	62	378	
Sandpaper, emery paper, and other abrasive paper and cloth.	45	55,928	23	25,736	86	16,013	11	1,080	2	10	779	18,039	2,821	
Sausage, meat puddings, headache, etc., and sausage casings, not made in slaughtering and meat-packing establishments.	10	2,834	5	517	—	—	1	30	—	—	316	4,750	1,836	
Scales and balances.	453	19,980	33	1,289	—	—	5	77	—	—	321	2,387	24	
Screw-machine products.	75	14,526	7	2,375	—	—	—	—	—	—	—	307	4	
Seeds and balances.	60	8,766	4	2,116	—	—	1	25	—	—	—	2,354	18,614	
Shoe and leather goods.	199	31,835	11	2,407	—	—	2	288	—	—	70	3,818	200	
												3,074	1,760	

TABLE 2.—PRIME MOVERS, MOTORS, AND GENERATORS, BY INDUSTRY GROUPS AND INDUSTRIES:
1927—Continued

INDUSTRY	PRIME MOVERS										ELECTRIC MOTORS DRIVEN BY CURRENT GENERATED IN ESTABLISHMENTS REPORTING	ELECTRIC GENERATORS	
	Number of estab- lish- ments re- porting	Total rated capacity (horse- power)	Steam engines	Steam turbines	Internal- combustion engines		Water wheels and water turbines	Electric motors driven by purchased current	Horse- power number	Horse- power	Horse- power number		
					Horse- power number	Horse- power							
Tools, not including edge tools, machine tools, files, or saws	639	35,963	80	10,473	7	2,400	45	2,334	27	1,958	8,141	68,798	43
Toys (not including children's wheel goods or sleds), games, and playground equipment	362	19,028	33	5,158	1	25	12	715	11	632	3,184	12,498	528
Tanning (not made in textile mills) and lace-trimmed articles, not elsewhere classified	703	3,864	7	711				5	16		3,013	3,137	375
Turpentine, suetseas, and bags	444	9,001	25	3,233				7	107	1	50	5,611	333
Type founding	615	3,211	245	1,326				427	1,784	2	45	244	56
Typewriters and supplies	18	1,230	3	986							1,233	510	674
Umbrellas, parasols, and canes	73	17,920	18	4,048	5	3,397	4	410	—	1,350	10,055	494	5,360
Whirlwheels, parsons, and ironing machines, for household use	144	2,411	9	1,225						1,183	54	582	6
Windmills and windmill towers	157	4,482	11	1,460				9	166	2	261	2,841	86
Window shades and fixtures	32	7,562	47	1,494				29	511	3	878	5,466	25
Wall paper	13	3,445	47	6,375	3	587					6,384	6,381	2,136
Wall plaster, wall board, and floor composition	203	116,230	80	11,197	7	8,200	21	5,205	4	495	91,133	1,096	18,731
Washing machines, wringers, driers, and ironing machines	73	20,697	14	2,750				4	87	—	2,614	17,880	152
Waste	106	14,529	35	3,447				4	78	14	591	7,577	10,433
Watch and clock materials and parts, except watchcases	15	210	5	2,830	1	35		1	25		617	1,404	509
Watchcases	40	4,121	10	5,725	1	1,600		4	352		617	1,597	505
Watches and watch movements	10	9,357	14	2,525				3	435		31	2,252	128
Wire	6	3,618	14	2,151	1	100		3	23	4	310	1,632	195
Windmills and door screens and weather strip	16	3,618	19	3,888	1	408	2	26	3	200	1,581	7,183	232
Window shades, drawn from purchased bars or rods	209	11,320	13	2,462	2	7,740	4	1,622	13	940	3,287	7,06	5,865
Framework, not elsewhere classified	309	8,679	27	4,115	17	19,345	4	1,622	13	6,841	103,749	2,568	37,859
Wood distillation and charcoal manufacture	480	45,855	37	5,249	4	340	19	334	5	220	6,008	39,715	707
	16,833	109	7,467	16	5,690	12	305	11	43	295	8,328	821	13,210

Wood preserving	Wood, turned and shaped, not elsewhere classified	30, 041	420	30, 041	420	1, 759	25	1, 207	14	811	809	16, 785	176	3, 395	46	2, 902	
Wooden goods, not elsewhere classified	Wooden goods, not elsewhere classified	538	358	350	31, 121	7	512	37	1, 140	60	2, 847	3, 013	20, 738	1, 218	5, 824	40	5, 009
Wood pulp	Wood pulp	21, 067	71	9, 653	3	2, 685	8	285	15	883	1, 307	7, 551	481	3, 871	15	3, 433	
Wood pulp	Wood pulp	18	27	71	725	1	150	400	1	50	115	1, 478	553	2	125		
Wood pulp	Wood pulp	25	935	12	4, 275	1	400	1	21	4	595	192	2, 644	353	6, 555	7	2, 085
Wood pulp	Wood pulp	54	15, 353	25	4, 245	3	900	12	1, 767	25	1, 767	415	8, 441	218	2, 040	11	1, 325
Wood pulp	Wood pulp	469	191, 703	325	65, 556	24	17, 658	12	1, 578	406	45, 870	7, 672	61, 055	6, 863	54, 677	252	43, 418
Wood pulp	Wood pulp	279	364, 422	237	81, 229	142	174, 057	12	36	109	28, 560	9, 778	80, 540	22, 601	183, 784	277	183, 126
Wood pulp	Wood pulp	44	53, 938	37	9, 526	5	10, 740	-----	-----	-----	-----	2, 772	33, 672	2, 567	37, 027	19	12, 556